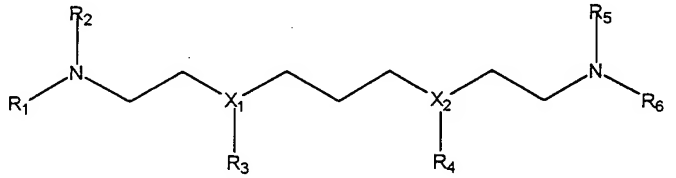
Replacement Sheet of the Abstract

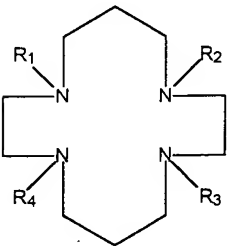
ABSTRACT (Once Amended)

The invention relates to the preparation of novel polyamines, such as derivatives of 1,3-bis-[(2'-aminoethyl)-amino]propane (2,3,2-tetramine) and 1,4,8,11-tetraazacyclotetradecane (cyclam), which can be used to treat mitochondrial and degenerative diseases.

Accordingly, in one aspect the invention is directed to compounds of the formula:



or



wherein

R_1, R_2, R_3, R_4, R_5 and R_6 may be the same or different and are hydrogen, alkyl, aryl, cycloalkyl, amino acid, glutathione, urate, ascorbate, estrogen, dehydroepiandrosterone, redox stabilizing substituents, a quinone, glutamate, succinate, $-(CH_2)_n[XCH_2)_n]NH_2$ - wherein n = 3-6 and X = nitrogen, sulfur, phosporous or carbon, or heterocycle wherein R_1 to R_6 taken together are $-(CH_2XCH_2)_n$- wherein n = 3-6 and X = nitrogen, sulfur, phosporous or carbon.

M, n, and p may be the same or different and are bridging groups of variable length from 3-12 carbons.

X_1 and X_2 may be the same or different and are nitrogen, sulfur, phosporous or carbon.

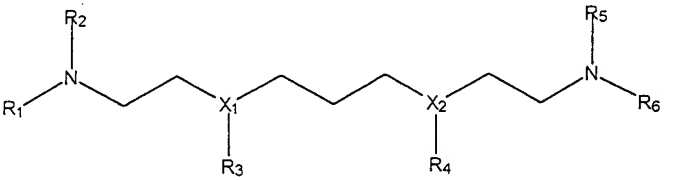
ATTACHMENT 2

Marked Up Version of The Abstract

ABSTRACT

[The invention relates to the preparation of novel therapeutically active polyamine derivatives of 1,3-bis-[(2'-aminoethyl)-amino]propane (2,3,2-tetramine) and 1,4,8,11-tetraazacyclotetradecane (cyclam), optimization of their mechanistic and bioavailability characteristics, which compounds can be used in the treatment of Parkinson's disease, Alzheimer's disease, Lou Gehrig's disease, Binswanger's disease, Olivopontine Cerebellar Degeneration, Lewy Body disease, Diabetes, Stroke, Atherosclerosis, Myocardial Ischemia, Cardiomyopathy, Nephropathy, Ischemia, Glaucoma, Presbycussis and Cancer.

Accordingly, in one aspect the invention is directed to compounds of the formula:



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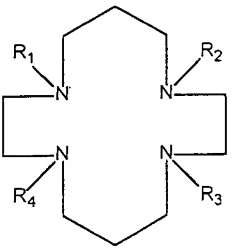

Wherein

R_1 and R_2 may be the same or different and are hydrogen, alkyl, aryl, cycloalkyl, amino acid, glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol, vitamin E, hydroxytoluene, carvidilol, □-lipoic acid, □-tocopherol, ubiquinone, phylloquinone, □-carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene – $(CH_2)_n[XCH_2)_n]NH_2$ - wherein n = 3-6 and X = nitrogen, sulfur, phosporous or carbon, or heterocycle wherin R_1 and R_2 taken together are $-(CH_2XCH_2)_n-$ wherin n = 3-6 and X = nitrogen, sulfur, phosporous or carbon.

R_3 and R_4 may be the same or different and are hydrogen, alkyl, aryl, cycloalkyl, amino acid, glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol, vitamin E, hydroxytoluene, carvidilol, □-lipoic acid, □-tocopherol, ubiquinone, phylloquinone, □-carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene or heterocycle wherin R_3 and R_4 taken together are $-(CH_2XCH_2)_n-$ wherin n = 3-6 and X = nitrogen, sulfur, phosporous or carbon.

R_5 and R_6 may be the same or different and are hydrogen, alkyl, aryl, cycloalkyl, amino acid, glutathione, uric acid, ascorbic acid, taurine, estrogen, dehydroepiandrosterone, probucol, vitamin E, hydroxytoluene, carvidilol, □-lipoic acid, □-tocopherol, ubiquinone, phylloquinone, □-carotene, meanadione, glutamate, succinate, acetyl-L-carnitine, co-enzyme Q, lazeroids, polyphenolic flavonoids, homocysteine, menaquinone, idebenone, dantrolene – $(CH_2)_n[XCH_2)_n]NH_2$ - wherin n = 3-6 and X = nitrogen, sulfur, phosporous or carbon, or heterocycle wherin R_5 and R_6 taken together are $-(CH_2XCH_2)_n-$ wherein n = 3-6 and X = nitrogen, sulfur, phosporous or carbon.

M, n, and p may be the same or different and are bridging groups of variable length from 3-12 carbons.

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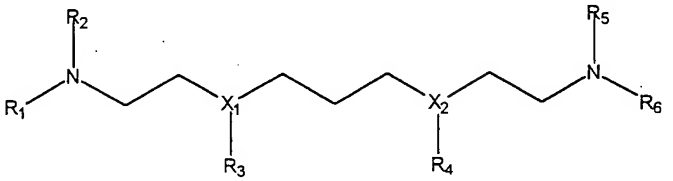

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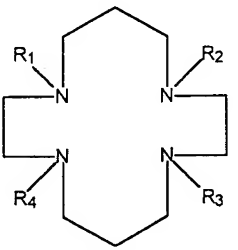

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